Marion Stone Appeal

Excerpts from the Department's License Record

- Applicant's supplemental memos #6, 7 & 8
  - May 15, 2009
  - August 14, 2009
  - September 24, 2009

- Report from Woods Hole Group

BAKER DESIGN CONSULTANTS
Civil, Marine and Structural Engineering

Date: May 15, 2009

To: Bill Bullard-Maine DEP

From: Barney Baker PE

Copy: Linda Kokemuller-Maine DEP
Steve Dickson- Maine Marine Geologist
Jay Clement- Army Corps of Engineers
Kirk Bosma- Woods Hole Group
Gregg Stone, Suzanne Kohlberg, Bill Taylor, File

Subject: NRPA Supplement No. 6
L-24089-4h-A-N, Stone and L-24088-4-H-A-N Kohlberg Seawall Replacement and Modification, Scarborough Beach, Scarborough, Maine

D:\BDC\ PROJECTS\07\07-18 STONE BEACHFRONT PROTECTION\PERMITS\PERMIT SUPPLEMENTS\07018_07044_DEP 3.26 MEETING.DOC

MEMO

This supplement is intended to address the outstanding permit review issues noted in our meeting of 23March2009 and repeated below. After this meeting Bill Bullard also requested that we complete a visual impact assessment for the proposed revetment to ensure that the proposed design meets all the standards of Chapter 315 including Landscape Compatibility, Scale Contrast and Spatial Dominance.

The attached drawings (revised to 4/20/09) incorporate design modifications that have been made to the proposed work.

C-3 Proposed Plan and Profile 1 (Stone property)
C-4 Proposed Plan and Profile 2 (Kohlberg property)
C-6 Stone Revetment (Typical Section)
C-7 Seawall Transition

- *Dune replenishment- Material would be placed as dune nourishment to base flood elevation + 1-ft. Any excess material would be placed on the beach.*

  Refer to Sheet **C-6 Stone Revetment**. This shows dune sand mounded to elevation 16.0 (Base Flood + 1-ft) behind the proposed revetment.

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- *Seaward toe location of revetment- The Sand Dune Rules suggested that the structure could not extend further seaward than the limits of the existing structure. Linda indicated that there were cases where an existing structure was rehabilitated/repaired with a concrete toe of 1-2 feet in front of the wall. However, with a complete replacement structure, the requirement was for no seaward encroachment. It was recognized that the Sand Dune rules might not have anticipated the revetment footprint that is never exposed at the beach elevation.*

  Refer to Sheet C-6 Stone Revetment. This shows the alignment of the revetment with respect to the adjacent timber bulkheads. The toe stone is centered on the existing bulkheads. Depending on the size and shape of this toe stone the maximum seaward toe encroachment will be 1-2 ft. However, the exposed portion of the revetment (winter or summer) does not extend further that the line of an existing timber bulkhead.

- *Transition with adjacent properties- There was agreement that the granite block abutments currently in the design should be substituted with a more gradual transitional design that blended the existing timber bulkhead and sloped revetment structures without the need for a special structure.*

  Refer to Proposed Plan and Profile drawings C-3 and C-4. The granite block abutments have been replaced with a curved timber faced vertical bulkhead that creates a more gradual transition with the stone revetment. With this geometry, no significant end effects due to 'localized wave action' develop. The Woods Hole Group estimate the net energy impact will be within a range of an '0 to 0.5 times' increase. This should be regarded as a minimal impact in the context of comparable discontinuities in alignment and beach profile along the shorefront properties that currently exist.

  Sheet C-7 Seawall Transition provides details for the construction of the seawall transition. The wall is similar to the PNBA wall in that hidden composite sheet piling provides long-term strength and constructibility, while the exposed timber sheathing matches the existing timber bulkheads.

- *Marine Mattress Justification- The need for the marine mattress shown on both the replacement bulkhead and the revetment solutions was questioned by Steve at the meeting because of the 'entrapment of sand' that effectively isolated material from the sand dune system*

  Refer to Sheet C-6 Stone Revetment. The marine mattress has been eliminated. The revised section includes a bedding layer, and under layer and an armor layer of progressively larger stones.

- *Conservation Easement -Gregg and Bill Taylor indicated they are working on a conservation easement with the Prouts Neck Bathing Association that would effectively remove a building opportunity from a section of the Stone beach frontage and effectively preserve an area that was larger than the upland area displaced by the sloped revetment solution.*

  The Stone family is in discussions with the Prouts Neck Association to define the details of the conservation easement. The Stone Family intends to grant a conservation easement on this lot but the Prouts Neck Association has not yet agreed to accept it. Another recipient may be required. Once this has been completed, the document will be provided to the Department. It is requested that this unsolicited offer not be a condition of approval so that this process not delay wall construction.

- *Visual impact assessment for the proposed revetment to ensure that the proposed design meets all the standards of Chapter 315 including Landscape Compatibility, Scale Contrast and Spatial Dominance.*

  Refer to attached Visual Impact Assessment.

Please contact me if these items omit or inaccurately represent any items.

Barney Baker PE
Project Manager

VISUAL IMPACT ASSESSMENT

Sections of the Maine DEP NRPA Chapter 315 standard are repeated below (boxed sections) with project specific notes inserted. A Location Map, Field Survey Checklist, Pictures and Project Drawings are appended to support a visual impact assessment of the proposed stone revetment.

7. **Visual impact assessments.** The Department may require a visual impact assessment if a proposed activity appears to be located within the viewshed of, and has the potential to have an unreasonable adverse impact on, a scenic resource listed in Section 10. An applicant's visual impact assessment should visualize the proposed activity and evaluate potential adverse impacts of that activity on existing scenic and aesthetic uses of a protected natural resource within the viewshed of a scenic resource, and to determine effective mitigation strategies, if appropriate. If required, a visual impact assessment must be prepared by a design professional trained in visual assessment procedures, or as otherwise directed by the Department.

In all visual impact assessments, scenic resources within the viewshed of the proposed activity must be identified and the existing surrounding landscape must be described. The assessment must be completed following standard professional practices to illustrate the proposed change to the visual environment and the effectiveness of any proposed mitigation measures. The radius of the impact area to be analyzed must be based on the relative size and scope of the proposed activity given the specific location. Areas of the scenic resource from which the activity will be visible, including representative and worst-case viewpoints, must be identified. Line-of-sight profiles constitute the simplest acceptable method of illustrating the potential visual impact of the proposed activity from viewpoints within the context of its viewshed. A line-of-sight profile represents the path, real or imagined, that the eye follows from a specific point to another point when viewing the landscape. See Appendix A for guidance on line-of-sight profiles. For activities with more sensitive conditions, photosimulations and computer-generated graphics may be required.

A Location Map and completed *Section 10 Field Survey Checklist* is appended.

The proposed seawalls are visually exposed to beach walkers and bathers with public access from the municipal facilities at Scarborough Beach and from private properties and clubs adjacent to the beach.

None of the following were identified within the view shed of the proposed seawall replacement structures:

- National Natural Landmarks and other outstanding natural and cultural features.
- State or National Wildlife Refuges, Sanctuaries, or Preserves and State Game Refuges
- A State or federally designated trail (e.g., the Appalachian Trail, East Coast Greenway);
- A property on or eligible for inclusion in the National Register of Historic Places pursuant to the National Historic Preservation Act of 1966, as amended
- National or State Parks

A visual impact assessment must also include narratives to describe the significance of any potential impacts, the level of use and viewer expectations, measures taken to avoid and minimize visual impacts, and steps that have been incorporated into the activity design that may mitigate any potential adverse visual impacts to scenic resources.

The proposed replacement beachfront protection structures are sloped stone revetments. These replace vertical timber bulkheads that have failed or are deteriorated. The immediate adjacent properties have timber bulkheads. Other shorefront sections nearby include natural dune, natural ledge, stone riprap and reinforced concrete. Refer to the appended pictures and Proposed Plan and Profile drawings C-3 and C-4.

The proposed use of stone on a sloped rather than a vertical seawall provides an attractive durable natural surface that is more effective at absorbing wave energy than a vertical bulkhead. The proposed stone revetment (like the vertical timber bulkhead it replaces) will define the landward edge of the beach sands in the summer and the beach cobbles in the winter. The proposed stone revetment does not impede existing beach access or area.

8. **Mitigation.** In the case where the Department determines that the proposed activity will have an adverse visual impact on a scenic resource, applicants may be required to employ appropriate measures to mitigate the adverse impacts to the extent practicable. Mitigation should reduce or eliminate the visibility of the proposed activity or alter the effect of the activity on the scenic or aesthetic use in some way. The Department will determine when mitigation should be proposed and whether the applicant's mitigation strategies are reasonable. The Department may require mitigation by requesting that the applicant submit a design that includes the required mitigation or by imposing permit conditions consistent with specified mitigation requirements.

   In its determination whether adverse impacts to existing scenic and aesthetic uses are unreasonable, the Department will consider whether the applicant's activity design is visually compatible with its surroundings, incorporating environmentally sensitive design principles and components according to the strategies described below.

   A. **Planning and siting.** Properly siting an activity may be the most effective way to mitigate potential visual impacts. Applicants are encouraged, and may be required, to site a proposed activity in a location that limits its adverse visual impacts within the viewshed of a scenic resource.

   B. **Design.** When circumstances do not allow siting to avoid visual impacts on a scenic resource, elements of particular concern should be designed in such a way that reduces or eliminates visual impacts to the area in which an activity is located, as viewed from a scenic resource. Applicants should consider a variety of design methods to mitigate potential impacts, including screening, buffers, earthen berms, camouflage, low profile, downsizing, non-standard materials, lighting, and other alternate technologies.

   C. **Offsets.** Correction of an existing visual problem identified within the viewshed of the same scenic resource as the proposed activity may qualify as an offset for visual impacts when an improvement may be realized. Offsets may be used in sensitive locations where significant impacts from the proposal are unavoidable or other forms of mitigation might not be practicable. An example of an offset might be the removal of an existing abandoned structure that is in disrepair to offset impacts from a proposal within visual proximity of the same scenic resource. Offsets can also include visual improvements to the affected landscape, such as tree plantings or development of scenic overlooks.

No formal mitigation is proposed with the seawall replacement. However, it should be noted that the upland property area has been reduced to accommodate the increased footprint of the sloped stone revetment over that of the vertical timber bulkhead.

9. **Determination.** It is the responsibility of the applicant to demonstrate that the proposed design does not unreasonably interfere with existing scenic and aesthetic uses, and thereby diminish the public enjoyment and appreciation of the qualities of a scenic resource, and that any potential impacts have been minimized.

Refer to the appended pictures and Sheet **C-6 Stone revetment**.

The Department's determination of impact is based on the following visual elements of the landscape:

A. **Landscape compatibility**, which is a function of the sub-elements of color, form, line, and texture. Compatibility is determined by whether the proposed activity differs significantly from its existing surroundings and the context from which they are viewed such that it becomes an unreasonable adverse impact on the visual quality of a protected natural resource as viewed from a scenic resource;

The current timber bulkhead is replaced by a sloped stone revetment that is the same height. Landward of the revetment, the area is planted with dune grass, which will match/blend with the adjacent properties.

The stone material will be taken from the same source to provide a uniform color. A direct match with the existing beach cobbles has not been located. However, as indicated by the pictures, the beach cobble will tend to obscure the revetment face as it is piled up by constructive wave action.

B. **Scale contrast**, which is determined by the size and scope of the proposed activity given its specific location within the viewshed of a scenic resource; and

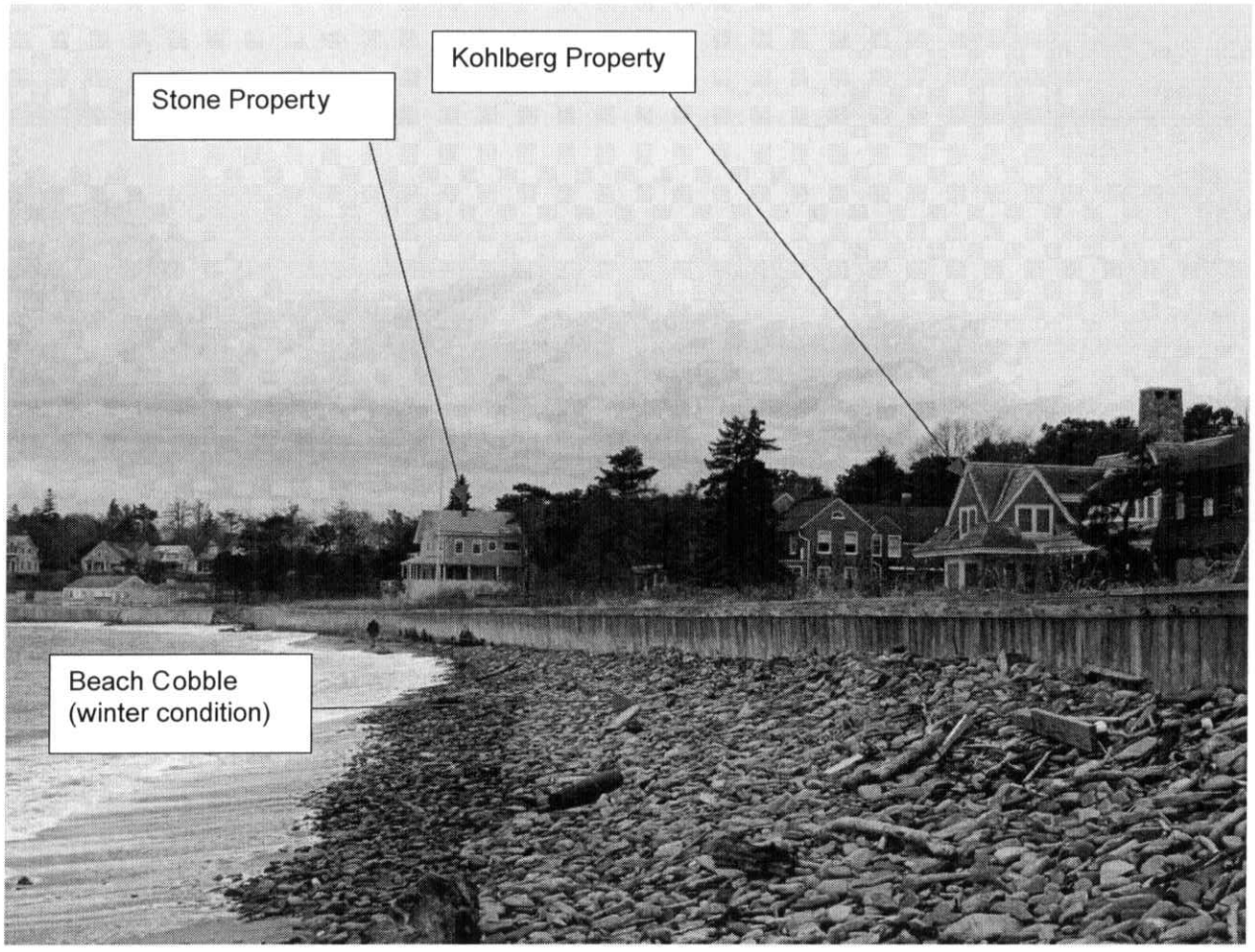
The elevation of the stone revetment matches that of the timber bulkhead that it replaces. The project also includes sand dune nourishment that raises the height of the dune landward of the revetment.

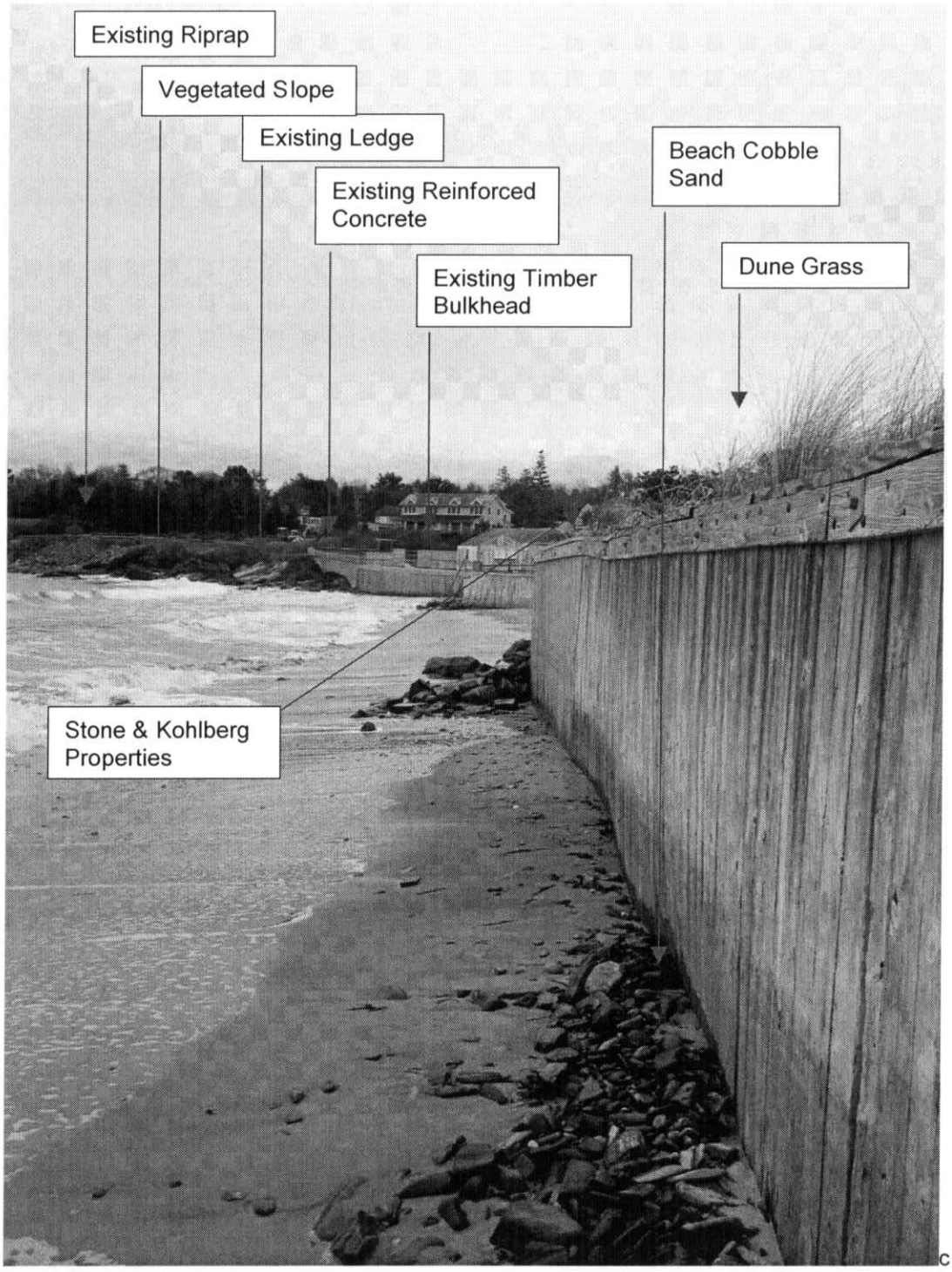
C. **Spatial dominance**, which is the degree to which an activity dominates the whole landscape composition or dominates landform, water, or sky backdrop as viewed from a scenic resource.

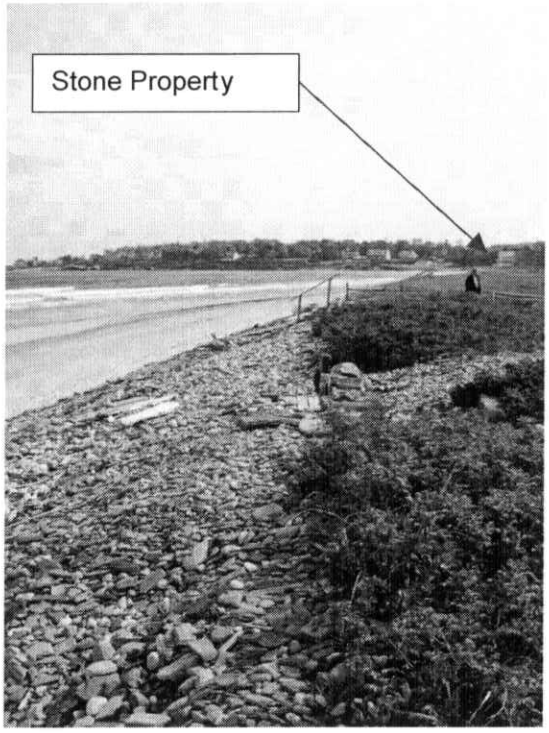
The proximate footprint of the sloped stone revetment is larger than the vertical bulkhead that it replaces. This has been minimized by incorporating the steepest practical slope in the revetment design. When viewed from afar, the existing and replacement structures have a similar projection with the stone revetment being less dominant due to closer color and texture compatibility with natural beach cobbles.

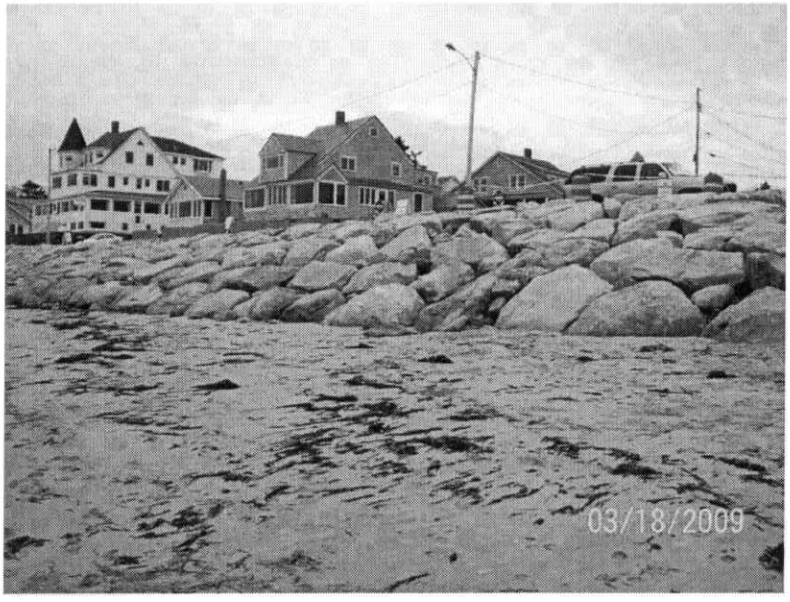
In making a determination within the context of this rule, the Department considers the type, area, and intransience of an activity related to a scenic resource that will be affected by the activity, the significance of the scenic resource, and the degree to which the use or viewer expectations of a scenic resource will be altered, including alteration beyond the physical boundaries of the activity. In addition to the scenic resource, the Department also considers the functions and values of the protected natural resource, any proposed mitigation, practicable alternatives to the proposed activity that will have less visual impact, and cumulative effects of frequent minor alterations on the scenic resource. An application may be denied if the activity will have an unreasonable impact on the visual quality of a protected natural resources as viewed from a scenic resource even if the activity has no practicable alternative and the applicant has minimized the proposed alteration and its impacts as much as possible through mitigation. An "unreasonable impact" means that the standards of the Natural Resources Protection Act, 38 M.R.S.A. § 480-D, will not be met.

PICTURES


Kohlberg Property
Stone Property
Beach Cobble
(winter condition)

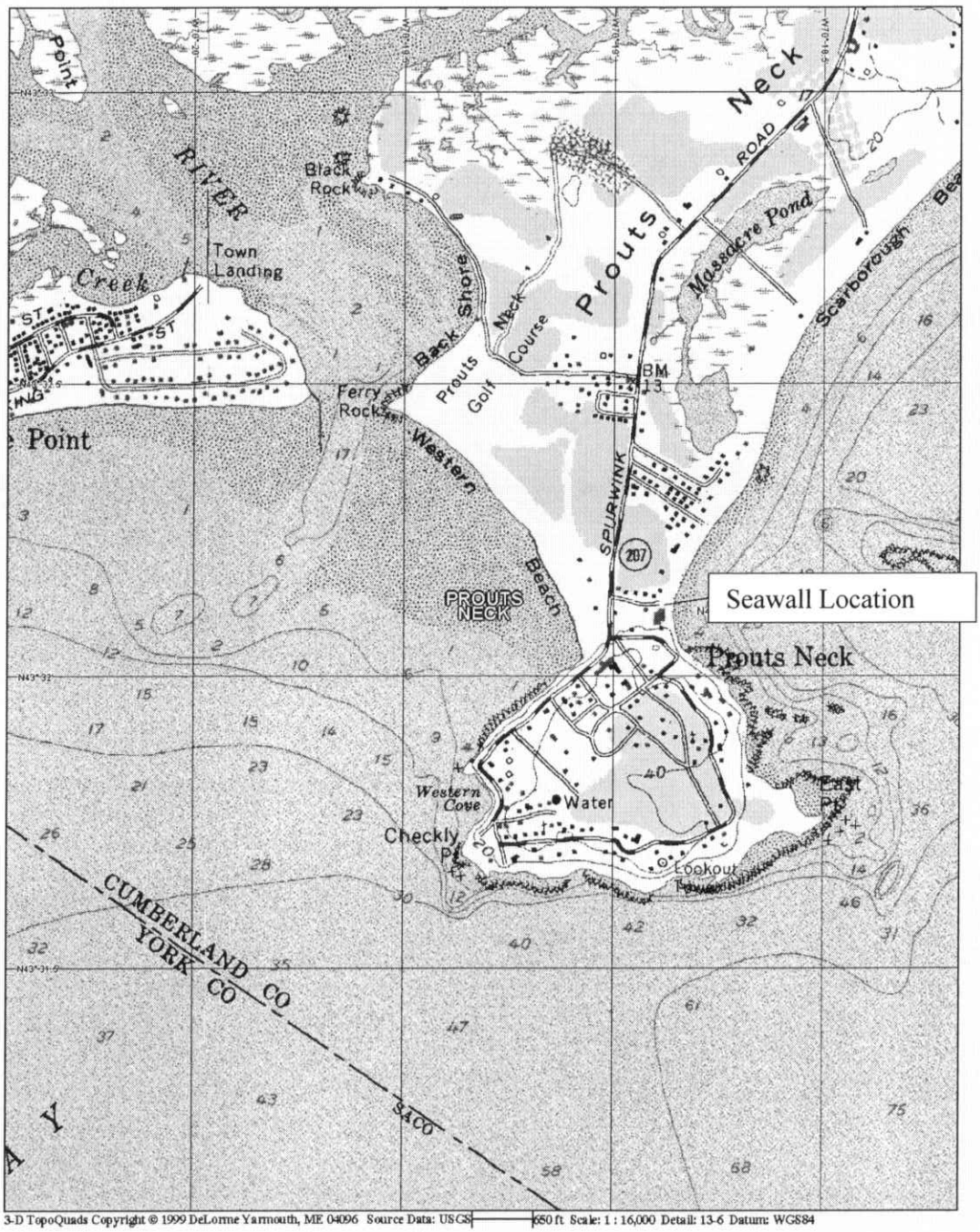

Existing Riprap
Vegetated Slope
Existing Ledge
Existing Reinforced Concrete
Existing Timber Bulkhead
Beach Cobble Sand
Dune Grass
Stone & Kohlberg Properties

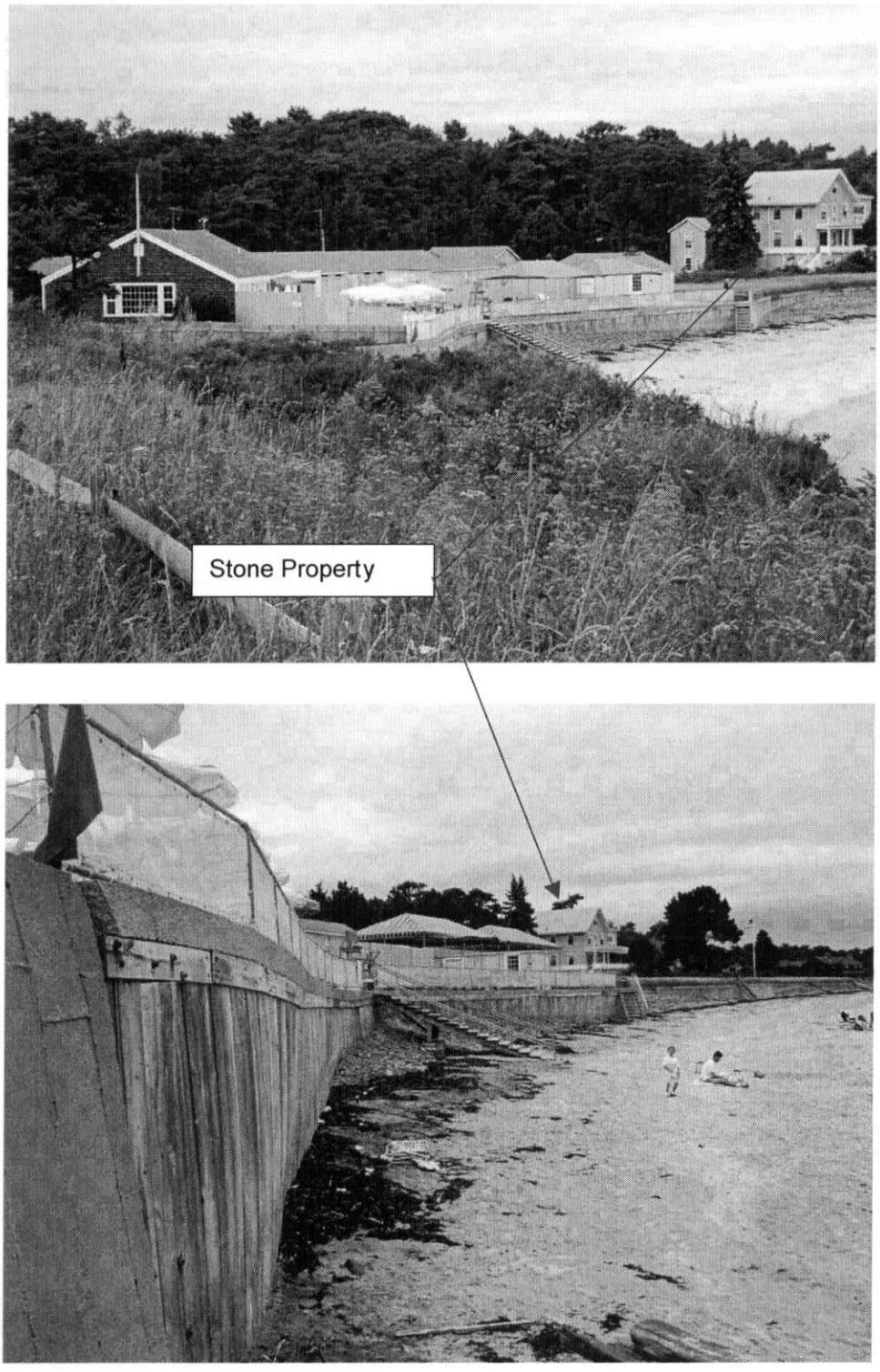




Recent stone revetment construction at Higgins Beach- This is similar construction to that which is proposed, but twice the scale/footprint. The proposed Stone and Kohlberg properties will also have dune grass planted immediately landward of the revetment.

Location Map




Stone Property

MDEP Visual Evaluation Form

FIELD SURVEY CHECKLIST

(Natural Resources Protection Act, 38 M.R.S.A. §§ 480 A - Z)

Name of applicant: *Stone and Kohlberg properties*

Phone: (207) 846-9724 (Agent-Barney Baker PE-Baker Design Consultants)

Application Type: *NRPA Coastal Sand Dune – Coastal Wetland Structure*

Activity Type: *Seawall Replacement*

Activity Location: Town: *Scarborough* County: *Cumberland*

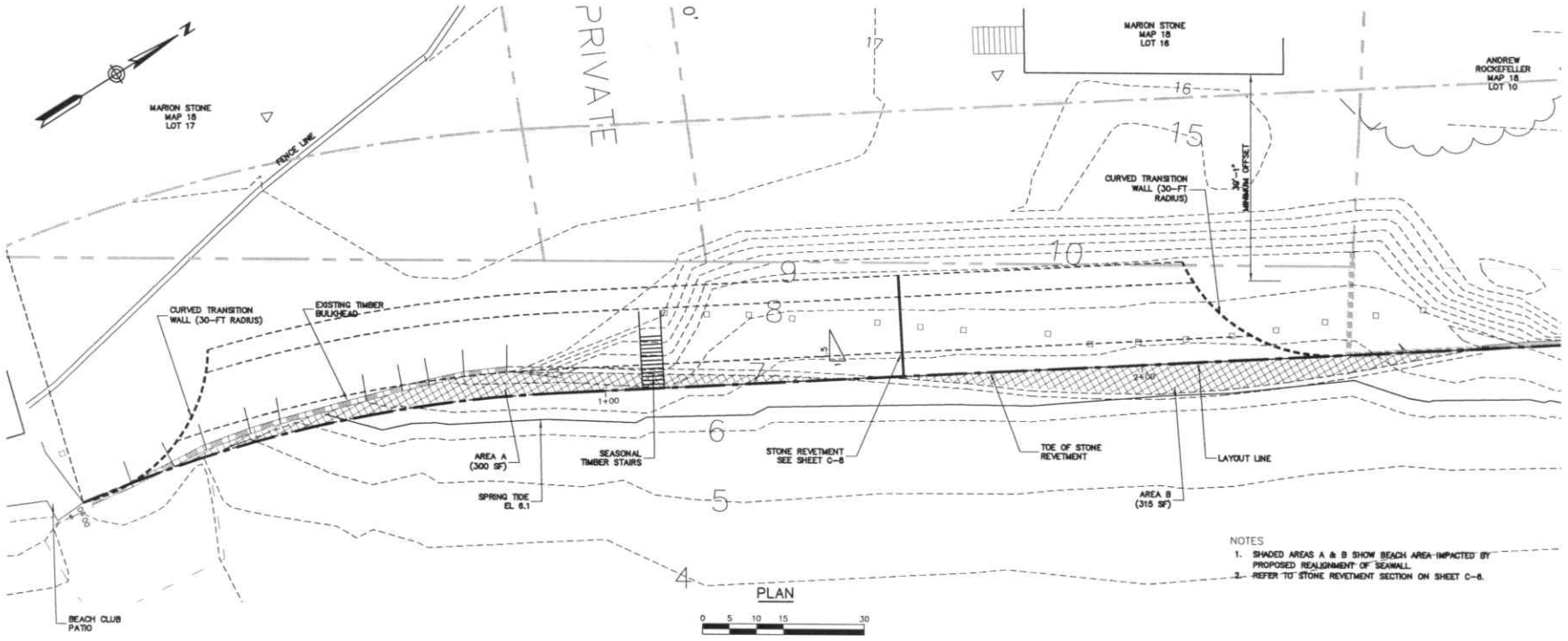
GIS Coordinates, if known: *43 32.1N 70 18.8W*

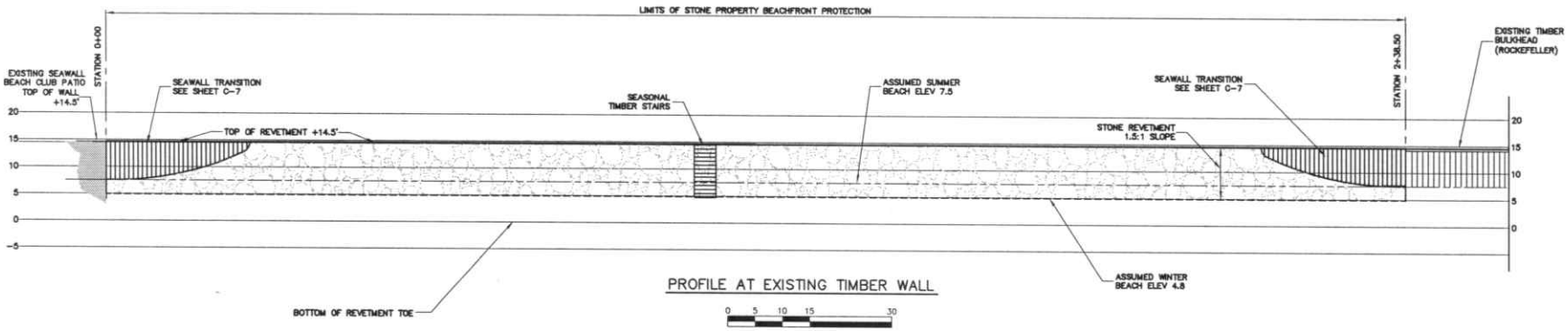
Date of Survey: *April 2006* Observer: *Barney Baker* Phone: *(207) 846-9724*

1. Would the activity be visible from:	Distance Between the Proposed Visibility Activity and Resource (in Miles) 0-¼	¼-1	1+	Notes
A. A National Natural Landmark or other outstanding natural feature?	☐	☐	☐	NA
B. A State or National Wildlife Refuge, Sanctuary, or Preserve or a State Game Refuge?	☐	☐	☐	NA
C. A state or federal trail?	☐	☐	☐	NA
D. A public site or structure listed on the National Register of Historic Places?	☐	☐	☐	NA
E. A National or State Park?	☐	☐	☒	Ferry Beach (Not Visible)
F. 1) A municipal park or public open space?	☐	☐	☒	Scarborough Beach
2) A publicly owned land visited, in part, for the use, observation, enjoyment and appreciation of natural or man-made visual qualities?	☐	☐	☒	
3) A public resource, such as the Atlantic Ocean, a great pond or a navigable river?	☒	☐	☐	Gulf of Maine
2. What is the closest estimated distance to a similar activity?	☒	☐	☐	Seawalls on adjacent properties
3. What is the closest distance to a public facility intended for a similar use?	☐	☐	☐	NA

4. Is the visibility of the activity seasonal? ☐Yes ☒No
(i.e., screened by summer foliage, but visible during other seasons)

5. Are any of the resources checked in question 1 used by the public during the time of year during which the activity will be visible? ☒Yes ☐No





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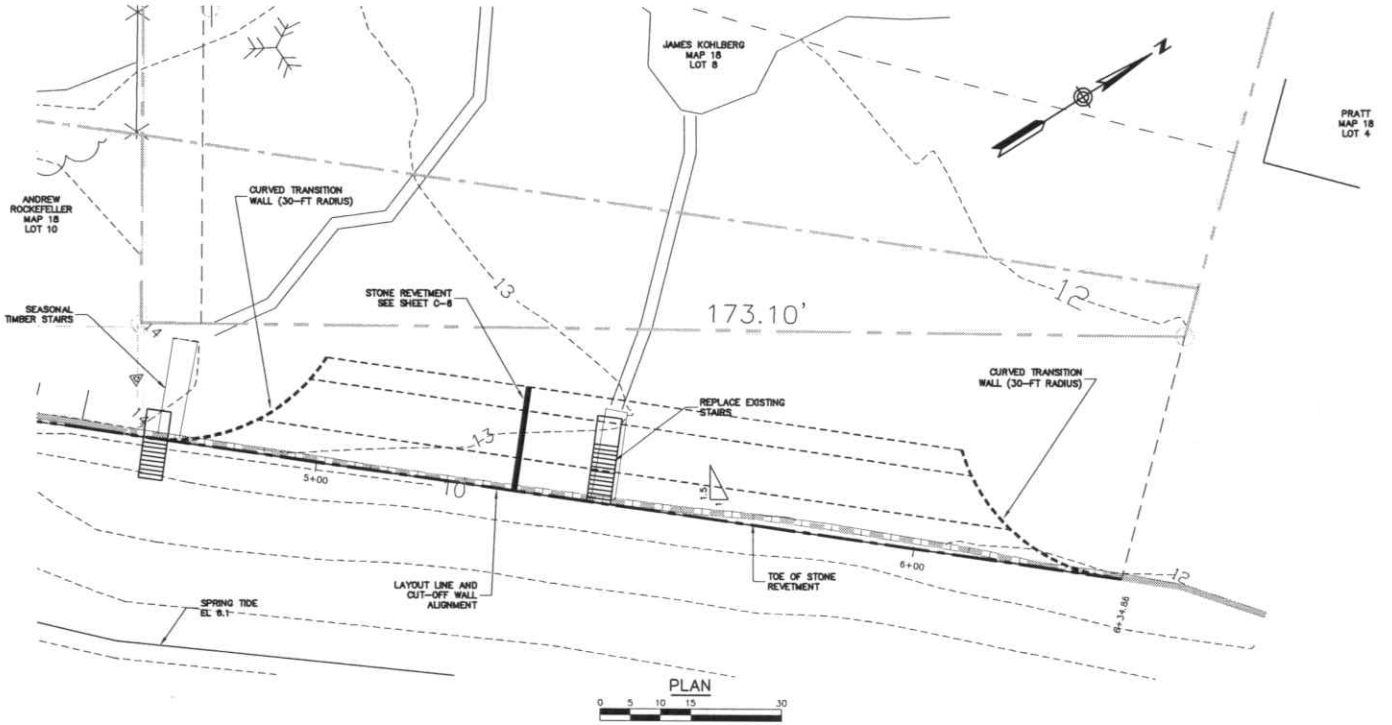
NO.	SUBMISSION	DATE	INT
6	Revised and Updated	4.20.09	B.B
5	PERMIT SUPPLEMENT	3.31.2009	B.B

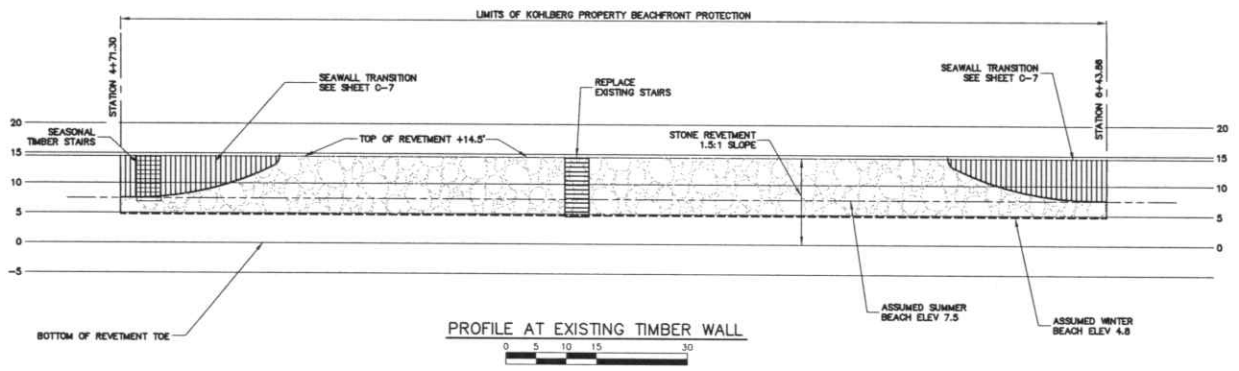
STATE OF MAINE
BARNEY BAKER #5737
REGISTERED PROFESSIONAL ENGINEER

DESIGNED BY: B.B
DRAWN BY: JWBS
CHECKED BY: B.B
SCALE: AS SHOWN

SHEET TITLE: PROPOSED PLAN AND PROFILE 1
PROJECT: STONE / KOHLBERG
BEACHFRONT PROTECTION
PROUTS NECK, SCARBOROUGH, MAINE

DATE 5/31/07
CONTRACT NO. 07018
SHEET NO. C-3
REV.





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NO.	SUBMISSION	DATE	INT.
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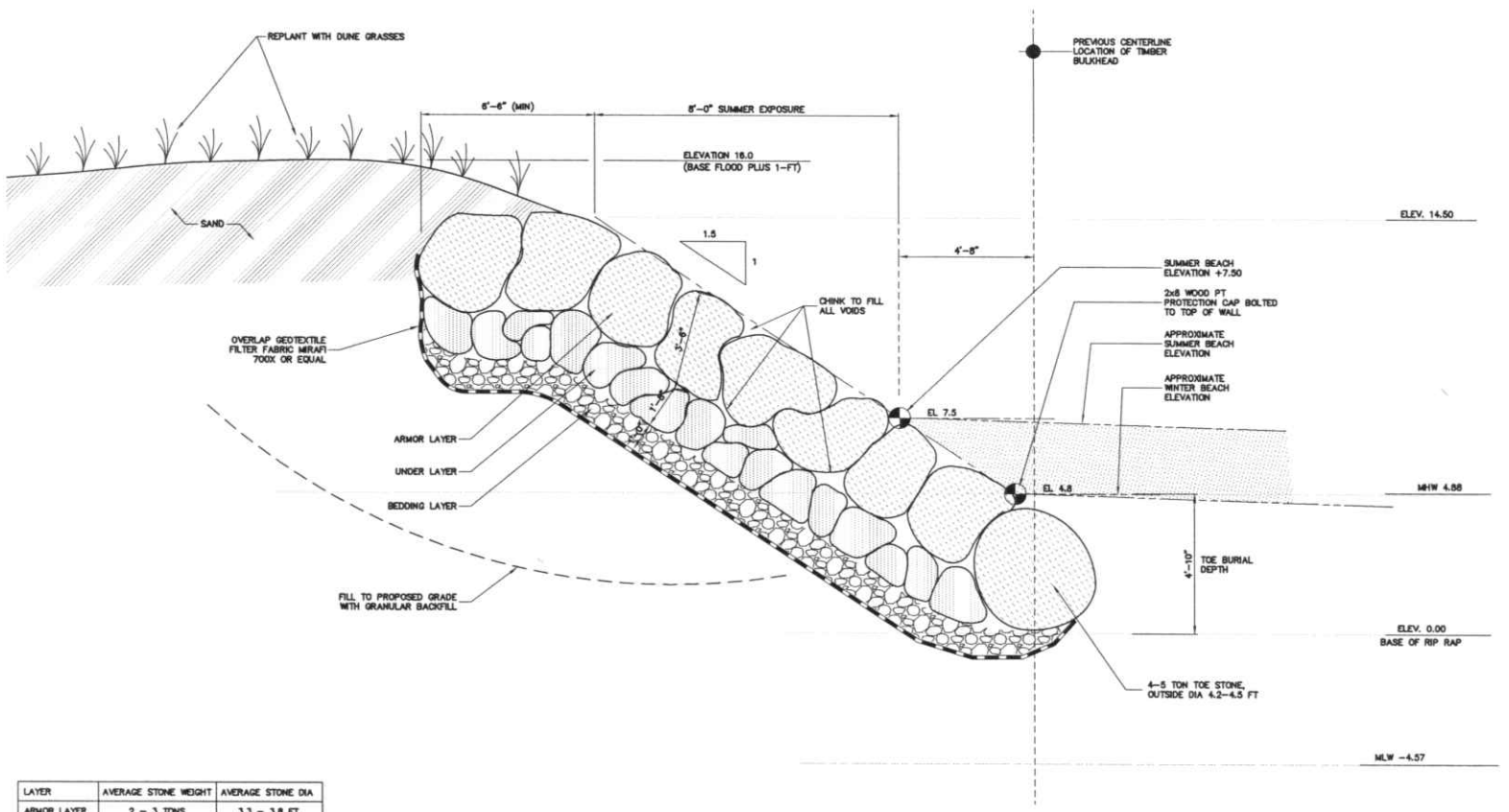
STATE OF MAINE
BARNEY
BAKER
#5737
REGISTERED
PROFESSIONAL ENGINEER

DESIGNED BY: BJB
DRAWN BY: JMBS
CHECKED BY: BJB
SCALE: AS SHOWN

SHEET TITLE:
PROPOSED PLAN AND PROFILE 2

PROJECT:
STONE / KOHLBERG
BEACHFRONT PROTECTION
PROUTS NECK, SCARBOROUGH, MAINE

DATE 5/31/07
CONTRACT NO. 07018
SHEET NO. C-4
REV.



LAYER	AVERAGE STONE WEIGHT	AVERAGE STONE DIA
ARMOR LAYER	2 – 3 TONS	3.3 – 3.8 FT
UNDER LAYER	500 LBS	1.7 FT
BEDDING LAYER	10 LBS	5 INCHES

STONE REVETMENT
TYPICAL SECTION

0 1.5 3 6

NOTES:
1. REFER TO NOTES ON SHEET C-1.
2. EXISTING VERTICAL ALIGNMENT IS A "BEST FIT" FOR THE EXISTING WALL LOCATION.
3. PLACE LARGER STONE AT TOE OF REVETMENT.
4. ARMOR STONE SHALL BE PLACED TO PROVIDE UNIFORM INTERLOCKED SURFACE.

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NO.	DATE	INT
6	4.20.09	BJB
Revised and Updated		
5	3.31.2009	BJB
PERMIT SUPPLEMENT		
SUBMISSION		

STATE OF MAINE
BARNEY J. BAKER #5737
REGISTERED PROFESSIONAL ENGINEER

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SHEET TITLE: STONE REVETMENT
PROJECT: STONE / KOHLBERG
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PROUTS NECK, SCARBOROUGH, MAINE

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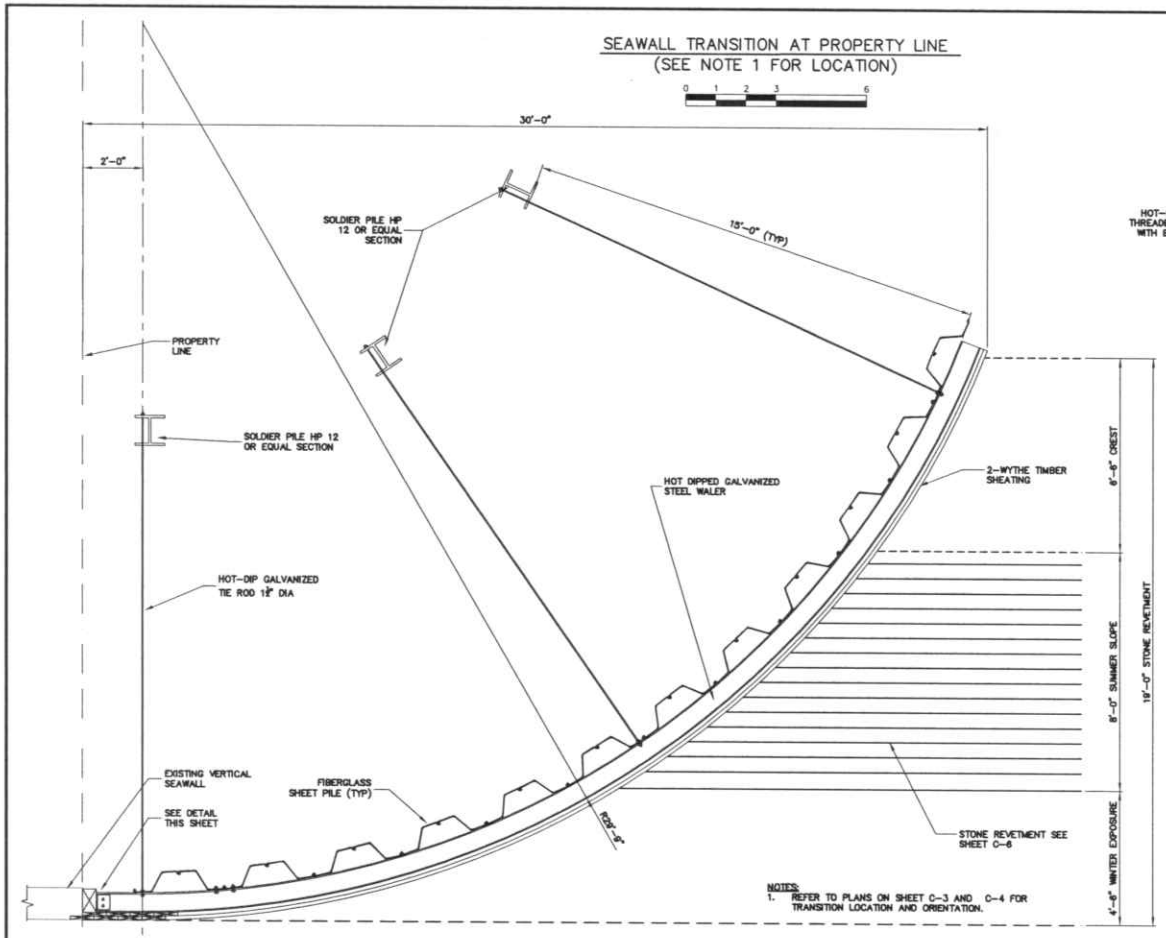
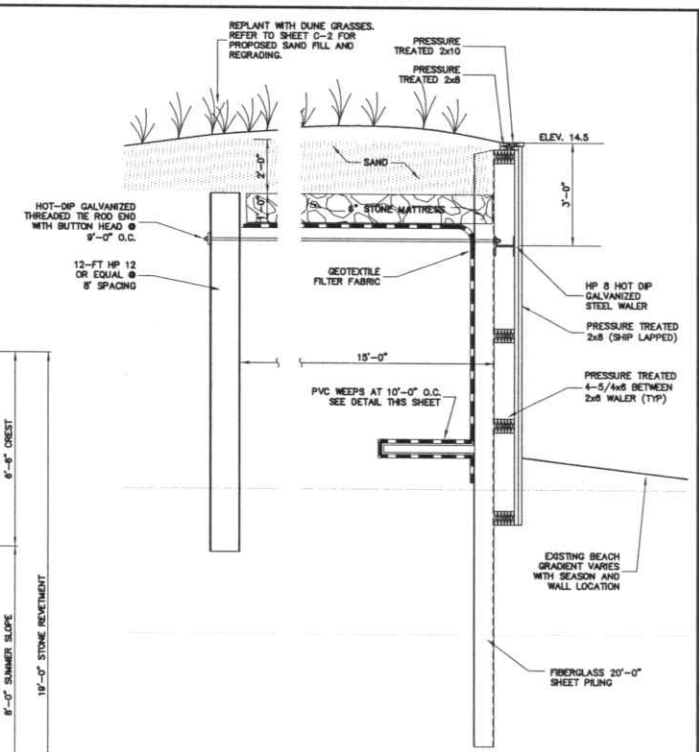
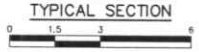
SHEET NO. C-6
REV.

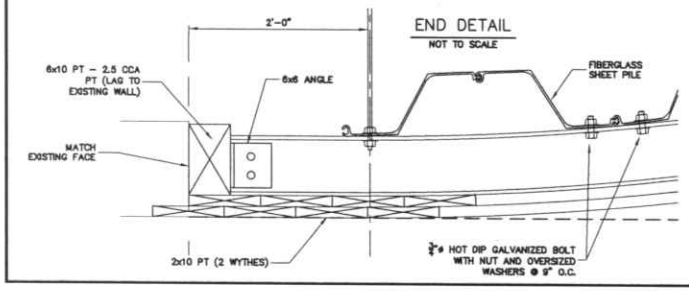
SEAWALL TRANSITION AT PROPERTY LINE
(SEE NOTE 1 FOR LOCATION)



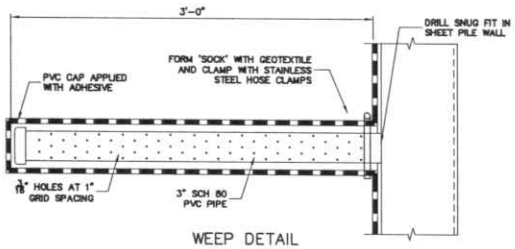


VERTICAL WALL TYPICAL SECTION





END DETAIL
NOT TO SCALE



WEEP DETAIL
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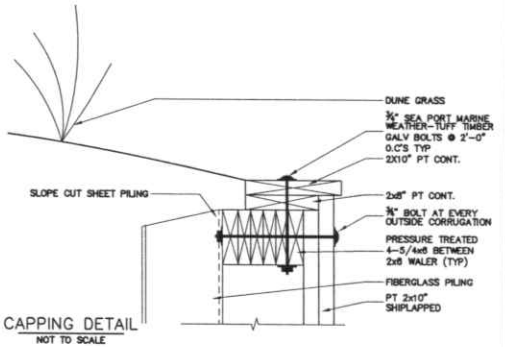

CAPPING DETAIL
NOT TO SCALE

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NO.		DATE	INIT.
6.	Revised and Updated	4.20.09	B.B
5.	PERMIT SUPPLEMENT SUBMISSION	3.31.2009	B.B

STATE OF MAINE — BARNEY BAKER #5737 — REGISTERED PROFESSIONAL ENGINEER

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To: Bill Bullard-Maine DEP

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MEMO

This supplement is intended to respond to your emails and correspondence from abutting property owners that has been received since Supplement No. 6 was provided on May 15, 2009. Refer to the list below. Sections of each document are repeated with a clarification/comment provided.

8/6/2009	Bill Bullard email to Barney Baker
7/15/2009	Verrill Dana LLP (Juliet Browne) letter to Bill Bullard representing PNBA
6/5/2009	Email to Bill Bullard from Douglas and Elizabeth R Currier, Peter and Victoria R. Philip, Andrew Rockefeller, Andrew M. and Regina Rockefeller
4/13/2008	Herbert W Pratt Letter to Bill Bullard (Received 10Jun09)

On behalf of my clients, who have been very patient throughout the permit review process which began with a preapplication meeting on June 24, 2007, I would ask that a meeting that includes senior Department staff follow this information, so that we can resolve any outstanding permit items in a timely manner.

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8/6/2009 Bill Bullard email to Barney Baker

Earlier this week I met with Steve Dickson and DEP Licensing Supervisor Marybeth Richardson and Division Director Jim Cassida to discuss the standards of Section 5 (E) of the Coastal Sand Dune Rules as they apply to the proposed change in the seawall design at the Stone and Kohlberg properties at Prout's Neck.

Our concerns remain that the information submitted in the applications and in subsequent submittals from Baker Design and the Woods Hole Group does not demonstrate that the stone revetment design would be less damaging to the coastal sand dune system and to adjacent properties than would a replacement structure of the same design and location. As noted in your submittal of 5/15/09, in spite of the best efforts and redesign of the transition area by the Woods Hole Group, the revetment proposal could, by their estimate, result in up to 50% increased energy impacts on adjacent properties.

RESPONSE: The impact on adjacent properties by the transition wall needs to be restated so that observations made in the 5/15/09 Supplement are not taken out of context.

When two structures (in this case the vertical wall and the sloped revetment) have the same crest elevation, the potential increase in wave height due to reflection from the structure is related to the bulk reflection coefficient (refer to the 11/7/2008 Woods Hole Technical Memorandum-pages 13 - 15) as tabulated below. An increase in wave height occurs when the reflected wave energy is superimposed on the incoming waves causing a potential increase in wave height fronting the structure. When compared with a natural, unstructured beach, which tends to dissipate a majority of the incoming wave energy, a structured shoreline will increase the wave energy on the beach due to wave reflection, while protecting the landward area.

Wave approach	Reflection Coefficient.	Potential Increase in Wave Height
Natural beach*	0.02-0.05	2-5%
Sloped Revetment (1-layer)	0.58	58%
Sloped Revetment (2-layer)	0.56	56%
Vertical Wall	0.90	90%

*= typical of a natural, sandy beach

As such, the installation of a sloped revetment results in a significant reduction of increased energy when compared to a vertical structure. For transition areas, either between structure types, or between a structure and the natural beach, additional wave energy increases can occur due to corner and end effects (as presented in the 11/7/2008 technical memorandum). The original transitional design, which consisted of compact 45 degree vertical corners, resulted in a significant potential energy increase. However, the redesigned transition, which also lays entirely on the applicants properties, results in a significant reduction in the potential wave energy/height increases. In fact, the wave energy increases at the transitional locations are now on the same order of magnitude or less than a vertical wall itself, and the remaining portion of the revetment would have less energy increases than a vertical wall. As such, the potential impact of the proposed structure on neighboring beach property is less than a vertical wall. As stated in Supplement No. 6 with some further explanation, the net energy impact of the transition wall "will be within a range of 0 to 0.5 times increase" over that of a sloped revetment. Note that this is still less than it would be for a vertical bulkhead and impact of the revised transition, if any, is located entirely on the Stone and Kohlberg properties.

The application materials also do not demonstrate that the proposed revetment plan would be less damaging to the coastal sand dune system as a whole.

For these reasons, the Department cannot approve the current designs.

RESPONSE: Considering the coastal sand dune system as a whole, the proposed revetment does most certainly meet the provisions of the Chapter 355: Coastal Sand Dune Rules for a replacement structure (Section 5E (1)).

THE PROPOSED REVETMENT IS LESS DAMAGING TO THE COASTAL SAND DUNE SYSTEM.

- We have provided site-specific technical analysis and published references that clearly show the benefits of sloped revetment vs. the existing timber bulkhead construction. These benefits are summarized below:
  - The proposed revetment reduces reflective wave energy.
  - The proposed revetment provides a longer-term solution than the existing timber bulkhead that avoids the impact and disruption of catastrophic failure.
  - The proposed revetment improves windborne transfer of sand from beach to dune system over that which is currently provided by a vertical seawall.
  - The proposed revetment is an engineered solution that considers a projected rise in sea level.

THE PROPOSED REVETMENT IS LESS DAMAGING TO THE EXISTING WILDLIFE HABITAT.

- There have been no application review comments to suggest that the sloped revetment will adversely impact wildlife habitat.

THE PROPOSED REVETMENT IS LESS DAMAGING TO ADJACENT PROPERTIES.

- The technical explanation provided on the previous page of this supplement shows that the proposed revetment and transition wall reduce wave impacts on adjacent property during normal wave activity and storm events.

7/15/2009 Verrill Dana LLP (Juliet Browne) letter to Bill Bullard representing PNBA

It is our understanding that in order to approve the application, the Department must first determine that the proposed seawall replacement activity meets the standards set forth in 06-096 CMR Chapter 355 and 38 M.R.S.A. § 480-D. See 06-096 CMR Chapter 355(1). As described below in greater detail, even as revised, the application fails to meet several of the requisite standards.

First, pursuant to 06-096 CMR Chapter 355(5)(E)(1), the Department may allow a seawall or similar structure to be altered or replaced "with a structure of different dimensions or in a different location that is farther landward if the department determines that the replacement structure would be less damaging to the coastal sand dune system, existing wildlife habitat and adjacent properties than replacing the existing structure with a structure of the same dimensions and in the same location." The proposed replacement structures are sloped stone revetments, instead of the vertical bulkhead alternative. Installation of the revetment will result in an increased horizontal footprint and a greater net material loss of frontal sand dune. Information contained in the applicants' submissions suggests that there is a hypothetical long-term benefit associated with the revetment option; however, it is undisputed that the structure itself will result in an increased loss of

frontal sand dune. As a result, we do not believe that the applicant has demonstrated that the design is "less damaging to the coastal sand dune" than the bulkhead replacement option.

RESPONSE: The benefits to the sand dune system of the sloped revetment over that of a vertical bulkhead in general and at this particular site are well documented by professional engineers in the permit application and numerous supplements provided by Baker Design Consultants and in the independent technical study provided by the Woods Hole Group.

It is acknowledged that an apparent loss of frontal dune occurs with the replacement the vertical bulkhead with the proposed stone revetment. This is consistent with the Sand Dune Rules (Section 5E) which encourage the placement of a replacement structure further landward of the existing structure *with the implied loss of frontal dune*. In drafting the Sand Dune Rules it is clear that DEP anticipated that frontal dune area might be sacrificed for other benefits to the sand dune system.

Second, as described in Supplement 6, the concrete toe of the proposed revetment will extend 1-2 feet beyond the front of the existing timber bulkhead, thereby extending further seaward than the current seawall footprint. Chapter 355(5) (E) (1) expressly prohibits approval of any project that extends further seaward than the existing footprint. The applicants attempt to explain this insufficiency by stating that the "exposed" portion of revetment will not extend beyond the existing timber bulkhead. See Supplement 6, pg. 2. The regulations, however, do not distinguish between exposed and potentially buried structures and certainly do not provide an exception for buried structures to extend further seaward than the structure being replaced. As a result because, as the applicants themselves concede, the structure extends further seaward than the structure being replaced, it does not and cannot meet the requirements of Section 355(5)(E)(1).

RESPONSE: The applicants have indicated they are willing to move the wall back so that the toe does not project beyond the line of the former and existing timber bulkhead. However, the applicants prefer to locate the toe as shown in the most recent drawings with the knowledge and understanding that revetment toe stones that extend beyond the limits of the former/existing bulkhead would not be exposed during normal seasonal variations in beach profile. This is a reasonable position to take and is consistent with an allowance of a small projection that often occurs with the permitted replacement of a structure or foundation placed directly seaward of a failing seawall.

Finally, we believe that the proposed replacement seawall does not meet the scenic component of NRPA's existing uses standard set forth in 38 M.R.S.A. § 480-D(1), which requires the Department to find that an activity will "not unreasonably' interfere with existing scenic, aesthetic, recreational or navigational uses." After reviewing the application, the Department determined that the proposed seawall replacement may have the potential to have an unreasonable adverse impact on a scenic resource and required that the applicants perform a visual impact assessment in accordance with NRPA Chapter 315 standards. It is the applicants' responsibility to demonstrate that the proposed project design "does not unreasonably interfere with existing scenic and aesthetic uses, and thereby diminish the public enjoyment and appreciation of the qualities of a scenic resource ... " Chapter 315, Section 9.

Although Supplement 6 contains a visual assessment, it was not prepared by a visual expert and does not address the nature of the use of the resource or the project's impact on that use by the public, as required by Chapter 315. The proposed replacement seawall will be constructed using a markedly different material than what is customarily seen along Scarborough Beach in the immediate vicinity of the project. Indeed, the proposed replacement structures are sloped stone revetments. These stone structures would replace vertical timber bulkheads that are more common to the existing character of the area. Further, the increased footprint of the proposed revetment option will result in increased visibility to beach users and adjacent property owners.

RESPONSE: The visual assessment was done in accordance with instructions provided in Bill Bullard's email of 3/30/09. We recognize that both the undertaking of these assessments and their interpretation can be subjective. Our assessment relied on the consideration of the existing features of the site and surrounding structures. The applicants take concerns with visual impact seriously and have considered alternate stone sources in an attempt to match the color of existing cobbles. However, a sample of cobbles taken from the beach shows a wide variation in color. Refer to the pictures on the next page.

Note that the picture above also illustrates that naturally occurring seasonal cobble formations will blend with the similarly sloped stone revetment sections.

6/5/2009 Email to Bill Bullard from Douglas and Elizabeth R Currier, Peter and Victoria R. Philip, Andrew Rockefeller, Andrew M. and Regina Rockefeller

Dear Mr. Bullard,

Thank you for forwarding on to us the Supplement No. 6 on the seawall replacement at Scarborough Beach. As you know our property is in the middle of the two proposed seawalls. We continue to be very concerned with the proposal presented by Barney Baker for the Kohlberg and Stone families.

In this newest supplement they address a number of the points that were raised as issues. We see some improvement in their proposal of the curved transitions between their proposed sloped wall and our abutting vertical wooden wall.

However, we have very serious concerns about how this new design will direct water in a storm. Has this approach been tried before? Is there any specific data that indicates how water will ultimately be directed in a storm? Without such data, there seems to be no way to predict how this design will work and how abutters' property will be affected. Indeed, we are concerned that the proposed design might actually direct water in a storm further into the abutters' properties.

RESPONSE: The transition wall was designed by Baker Design Consultants with technical review by the Woods Hole Group. Both firms have experience with seawall structures on the coast of Maine. Baker Design Consultants designed the replacement seawall for the Prouts Neck Beach Club which is adjacent to the Stone property. The curved timber solution offers a gradual transition between the sloped revetment and the vertical bulkhead to maintain any impact entirely on the applicants' property. When the seawall is impacted during a storm event, the combined wave height of the reflected and incident wave energy will be less than currently occurs at the vertical timber bulkheads. In addition, the transitional area has been designed to reside solely on the applicants property.

An existing comparison (although a much more abrupt transition) can be made with the existing ROW access at Massacre Lane. At this location the vertical wall returns on both sides of the gradual access gradient. Provided the vertical wall remains intact the transition has survived wave activity associated with storm conditions.

Supplement No. 6 also addresses the issue of the seaward toe location of the proposed sloped wall. Their proposal still extends into the beach area. In our opinion, their assertion that the toe will remain underground so that it will never be visible is incorrect. In the winter, the level of sand and stone along the existing seawalls is constantly changing. At times in the winter, large boulders - 2 -3 feet in height - are often exposed and then covered with sand again in the summer months. This proposed "buried" extension seaward will not remain covered. We have attached pictures of the beach taken in the past week (June 1, 2009) and the summer sand has not yet come in to cover the rocks. Each year the sand does come in and cover the exposed rocks in the pictures but that change in sand level will not keep the extending toe of the proposed wall buried.

RESPONSE: The exposure of the proposed revetment (as is the case with the existing timber bulkhead) will vary during the year. Generally, minimum exposure occurs in the summer when beach sands are at their highest. The revetment toe stones are set at a design elevation that considers seasonal changes in beach profile and projections for beach scour due to storm activity.

We also want to address the visual impact assessment in the supplement. We disagree with the suggestion that this sloped wall will not impact the visual appearance of this beautiful beach. All the walls along this area of the beach are vertical. The vast majority of these walls are wooden and even those that are not, stand vertically aligned in a continuous straight line. There was even a new vertical wooden wall installed this spring at the far end of the beach in front of the Chapin property. This has blended in beautifully with the existing walls. The proposed sloped stone wall will shatter the continuity of the beach wall and, we think, dramatically and negatively impact the visual appearance of the beach.

RESPONSE: We agree that change is often hard to accept and of course visual judgments are subjective. Just as the existing PNBA wall evolved to the current wall type and alignment when previous wall types failed, a change in existing wall design/appearance should be anticipated to meet changing conditions that include a predicted rise in sea level.

As the existing vertical timber walls fail, the stone revetment provides a more durable replacement alternative that also benefits the sand dune system. Based on these attributes and the strict standards of Chapter 355: Coastal Sand Dune Rules, the best choice for future seawalls is the sloped system.

It should also be noted that the materials for the proposed revetment are natural to the beach environment, unlike the existing timber and concrete, and the slope is much more visually compatible with the gradient of the beach and pre existing dunes than the vertical wall.

In summary, we are not in support of the stone sloped wall because of the possible adverse effect to our property in a big storm, that the protruding toe of the wall will not remain buried and our belief that this sloped wall will add a very negative visual impact on the entire beach. And so, we continue to believe that the best solution is for the Stone's to rebuild their sea wall as it was - and in keeping with all the other sea walls on the beach.

4/13/2008 Herbert W Pratt Letter to Bill Bullard (Received 10Jun09)

This letter is to reaffirm our position on the proposed stone revetment for a seawall at the Kohlberg property adjacent to our property at Prouts Neck.

We do not accept the visual change from the existing wooden seawall to a stone revetment which is out of keeping with the rest of the beachfront.

We are also concerned that it is unknown as to what the seawater action would do between the two different walls.

Response: This letter appears to have been written before the visual impact assessment and the transition wall was redesigned in response to DEP/MGS comments. Refer to Supplement No. 6. dated May 15, 2009 for project input on both these items.

BAKER DESIGN CONSULTANTS
Civil, Marine and Structural Engineering

Date: September 24, 2009

To: Bill Bullard-Maine DEP

From: Barney Baker PE

Copy: Marybeth Richardson-Maine DEP
Jim Cassida- Maine DEP
Steve Dickson- Maine Marine Geologist
Jay Clement- Army Corps of Engineers
Kirk Bosma- Woods Hole Group
Gregg Stone, Suzanne Kohlberg, Bill Taylor, Jeff Jones, File

Subject: NRPA Supplement No. 8
L-24089-4h-A-N, Stone and L-24088-4-H-A-N Kohlberg Seawall Replacement and Modification, Scarborough Beach, Scarborough, Maine

C:\BDC3500_PROJECTS\07\07-18 STONE BEACHFRONT PROTECTION\PERMITS\PERMIT SUPPLEMENTS\SUPPLEMENT NO. 7\07018_ 07044 SUPPLEMENT MEMO NO 7.DOC

MEMO

This supplement is intended to respond to emails and correspondence from neighborhood property owners that has been received since Supplement No. 7 was provided on August 14, 2009. Refer to the list below. Sections of each document are repeated with clarification/comment provided as necessary. A summary follows Steve Dickson's email response to reiterate proposed project compliance with Section 5. E. (1) of Chapter 355 Coastal Sand Dune Rules.

9/2/2009	Email to Bill Bullard from Steve Dickson-State Marine Geologist
Summary	Chapter 355 Coastal Sand Dune Rules compliance
9/7/2009	George Bell (Harmon Street Neighbor) email to Bill Bullard

I also take this opportunity to introduce Jeff Jones of Jones & Warren, P.A; 243 US Route 1; Scarborough, Maine 04074. Jeff has been added to the team to represent the interests of Jim and Suzanne Kohlberg.

As requested in Supplement No. 7, on behalf of my clients, who have been very patient throughout the permit review process which began with a pre-application meeting on June 24, 2007, I would ask that a meeting that includes senior Department staff follow this submittal, so that we can resolve any outstanding permit items in a timely manner. This could be done in conjunction with the pending site visit with Bill Bullard or at another time.

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9/2/2009 Email to Bill Bullard from Steve Dickson-State Marine Geologist

From: Dickson, Stephen M. [mailto:Stephen.M.Dickson@maine.gov]
Sent: Wednesday, September 02, 2009 1:31 PM
To: Bullard, Bill
Cc: Slovinsky, Peter A; Barney Baker
Subject: MGS Comments on Stone (L-24089-4H-A-N) and Kohlberg (L-24088-4-H-A-N) Seawall Modifications, Scarborough

We have a few final thoughts for you to consider in your review of these applications.

1. **Energy Reflection vs. Wave Overtopping.** We reviewed Supplement 7 and considered the issue of the 0 to 50% energy increase (Supplement 6, p. 2 under *Transition with adjacent properties*). The explanation (Supplement 7 p. 2) is confusing, unclear, and not supported by new facts. It seems from comments in Supplement 7 that the point of mentioning that "increase" (in Supplement 6) was in comparison to the proposed sloped revetment. Supplement 7 says:

"…the net energy impact of the transition wall 'will be within a range of 0 to 0.5 times increase' over that of a sloped revetment."

Perhaps this is the basis for the statement: the sloped revetment has a reflection coefficient of 0.56 to 0.58 so a 0.5 times increase might be 1.5 x 0.58 = 0.87. This is less than or about the same as the vertical wall reflection coefficient of 0.90. While this is similar in magnitude to the pre-existing condition it still **relates to wave reflection back onto the beach** in a storm.

Response: The basis of the calculation assumed by MGS is correct. The maximum wave energy that could be expected in front of the various structural components is a summation of the incident wave and the reflected wave. Therefore, for each structural component evaluated, the wave energy at the structure would be as follows:

Structural Element	Reflection Coefficient	Maximum Increase in Wave Energy
Sloped Revetment	0.58	58%
Vertical Wall	0.90	90%
Transitional Area	0.87 (1.5 times 0.58)	87%

It is also true that the reflection coefficient relates to the amount of energy reflected from the structure (not necessarily perpendicular to the shoreline) and potentially superimposed with the incident wave (during any conditions where waves interact with the structure) at the structure. As such, for the portions of the structure that are constructed parallel with the beach, the energy is reflected seaward, with the direction of the reflected energy dependent on the angle of the incident wave. The formulation of the transitional area reflection coefficient does consider the effect of the more complex reflection that occurs due to the corner formed by the two structures. This was calculated specifically in the Woods Hole Group (WHG) technical memorandum (2008) in the

structural transitions section. As such, the reflection coefficient for the transitions area includes both the standard reflection (reflected off the structure) and the increased reflection caused by the concave corner that is created by the integration of the two structural types (e.g., side reflection, wave agitation, etc.). This results in an increase in the coefficient due to the effects of the corner and transition.

As we see it, the value was originally established to describe wave energy reflection perpendicular to the shoreline and not the complex side reflection and interaction of waves at the ends of the structure. In fact, one might argue that with less reflection there is more wave energy (and hence water) propagating in a shoreward direction. It seems possible that this condition could potentially result in **more water overtopping the riprap or the curved seawall.**

Response: As discussed in the previous response, the formulation of the transitional area reflection coefficient does consider the effect of the more complex reflection that occurs due to the corner formed by the two structures. The WHG memorandum (2008) provides a structural transitions section that is intended to quantify the increased reflection due to the transitional areas.

In addition, since the reflection coefficient provides the maximum wave height that can be expected at the structure, the reflection coefficient is an indication of the potential level of overtopping, the wave–impact forces, and the scour at the structure. For example, in the case of a vertical wall, the reflected wave will heighten the incident wave and result in increased wave-impact forces, scour, and overtopping. The overtopping (Table 3, WHG, 2008) and scour (Table 6, WHG, 2008) were quantified in the Woods Hole Group technical memorandum (2008) for the case of a seawall and revetment. The vertical seawall will result in significantly more overtopping than the sloped revetment.

The response from MGS states:

*"In fact, one might argue that with less reflection there is more wave energy (and hence water) propagating in a shoreward direction. It seems possible that this condition could potentially result in **more water overtopping the riprap or the curved seawall."***

There is no technical basis offered to support this comment provided by MGS. In fact, it has already been quantitatively shown that more water overtops a vertical seawall than a sloped revetment structure (Table 3, WHG, 2008). Wave overtopping is typically reduced for a sloping rubble structure since the wave energy is more easily dissipated on the face of the structure. The results of the technical analysis (WHG, 2008) show that for the typical storm events, the amount of overtopping is greater for the vertical structure. For example, during a 50-yr storm event, both alternative structures would be overtopped; however, the rate of overtopping of the revetment would be 0.2 l/s-ft, while the vertical structure would be overtopped at a rate of 0.9 l/s-ft. This represents over 4 times more water spilling into the upland area for a vertical structure versus a revetment in this particular case. The amount of overtopping expected for the transitional area will be more than the revetment alone, but will still be slightly less than the vertical wall since a portion of the revetment will be fronting the majority of this transitional area, and thus dissipate some of the wave energy. Overall, the net amount of overtopping along the entire subject property would be reduced compared to the vertical wall alternative, and can only result in less overtopping on the neighboring properties as well.

We know from the first technical analysis by the Woods Hole Group that both the existing bulkhead and proposed riprap structures get overtopped in large storms. The response (Supplement 7, p. 5) is:

> "The curved timber solution offers a gradual transition between the sloped revetment and the vertical bulkhead *to maintain any impact entirely on the applicants' property*" (emphasis added.)

It is unclear to us how this claim of localizing the impact to the applicants' property can be supported. We understand that there is more distance from the curved wall to the property lines but, as we have mentioned previously, overwash extends well into all of the lots. It is not clear why the splash over that was once evenly perpendicular to the shoreline will not become more concentrated in the direction of abutting lots with a curved wall. I recently spent some time observing wave refraction, runup, reflection, and interaction patterns from Hurricane Bill on sloped shorelines and curved seawalls and saw some very complex and forceful overtopping that I believe would be extremely difficult to model with certainty. Questions that are still (and may remain) outstanding, even with the curved design: **(a) are there increased flood hazards, (b) is wave overtopping more focused, and (c) is there more dune scour on abutting properties?**

> **Response:** It is correct that both types of structures will get overtopped in large storm events; however, as explained in the previous response, the amount of overtopping will be significantly less for the sloped structure. We agree that once the structure(s) are overtopped, it is difficult to predict exactly where the water will flow, although it is likely to transport to the lowest lying areas. However, there will be an overall decrease in the amount of water overtopping the structure due to the placement of the revetment instead of a vertical structure. Although the amount of overtopping in the transitional areas has not been calculated, it will be larger than the revetment, but smaller than for the vertical wall alone.

The orientation of the curved wall suggests to us that the direction of wave reflection would no longer be straight offshore but rather redirected at an angle to the beach. The consequences of this altered runup and backwash are unclear but might include water flowing back to the beach between surges in concentrated areas - conceptually creating a rip current-type of flow across the sandy beach. If this were to happen, we are concerned that **the beach might be preferentially eroded in front of the revetment.**

> **Response:** The direction of reflected wave energy will ultimately depend on the incident wave direction, and therefore will vary. However, it has been extensively shown that the amount of erosion and scour occurring along the beach fronting the revetment will be significantly less than the erosion and scour occurring along the beach fronting a vertical structure (WHG, 2008). The transitional areas, even considering the increased transitional reflection, still have less energy returning to the beach than then the vertical wall alone. Coupled with the significant reduction in scour fronting the rest of the revetment, it is clear that on a net basis, the slopped revetment structure will result in a less eroded beach than the beach with vertical walls.

2. **Loss of Frontal Dune.** If you consider the frontal dune landward of the former or existing wooden seawalls part of the "resource" then the sloped riprap covers a relatively significant area of this pre-existing resource. The surface **area of sandy, vegetated frontal dune is reduced** even if some of the dune sand is redistributed on remaining dune surfaces.

COMMENT: The fill material behind the existing seawall should be considered part of the '**seawall system'** because it would not occur 'naturally' if the bulkhead or revetment were removed.

While the surface area of the vegetated frontal dune is reduced, the proposed Stone and Kohlberg seawalls provide a net gain of resource material to the sand dune system. All suitable material displaced by the seawall construction will be spread on the beach. Additional beach sand material will be imported to the site to nourish and build-up the area landward of the seawalls prior to planting with dune grass.

We do agree that when the seawall is overtopped, some backfill material does contribute to the sand dune system when surface deposits are displaced and transported inshore with wave runup and offshore with backwash. This action will continue to occur regardless of the type of seawall installed (vertical bulkhead or sloped stone revetment).

In other locations where this type of replacement seawall construction has occurred (e.g. Higgins Beach in Scarborough) the new project's footprint was essentially over a pre-existing engineered footprint. In Saco along Surf Street the installation of a Geotube was on the footprint of the road and not allowed to extend into the resource. This is not the case at these locations on Scarborough Beach. In my opinion the Coastal Sand Dune Rules do not necessarily imply the loss of a frontal dune is an acceptable "sacrifice" but rather that a seawall redesign may move landward into areas of existing development where the "resource" has been altered prior to the Rules coming into existence. **It is precedent-setting to remove some of the frontal dune surface and replace it with coastal engineering.**

Response: The Coastal Sand Dune Rules do not provide a definition for a 'pre-existing engineered footprint'. The point made in Supplement No. 7 was to illustrate that the stone in a sloped revetment requires a larger footprint than the timber cap of a vertical bulkhead due to sloped construction. However, it should be noted that without either the existing bulkhead or proposed revetment structures in place, the resulting beach profile would be the same. This suggests that the stone revetment **'seawall system'** proposed is 'essentially over a pre-existing engineered footprint' formerly occupied by the existing timber bulkhead **'seawall system'**. We do not believe this action to be precedent setting.

The Coastal Sand Dune Rules do require that:

> *5.E. (1) With a permit from the department, a seawall or similar structure may be replaced with a structure of different dimensions or in a different location that is farther landward if the department determines that the replacement structure would be less damaging to the coastal sand dune system…*

The applicants have agreed to place the stone revetment entirely landward of the vertical wall alignment. We have also shown in the original Permit Applications and numerous Supplements that the Stone Revetment provides clear significant benefits to the sand dune system over that of the vertical bulkhead it replaces. A summary of these benefits is provided below

- Wave energy is reduced by the sloped seawall resulting in reduced wave energy and associated overtopping, flooding and backwash.
- Reduced reflected wave energy onto beach results in less beach scouring.

- A more durable wall replaces an under designed timber structure. The more permanent nature of the sloped revetment results in a reduced impact to the resource associated with repair activity.

- The replacement revetment more closely resembles naturally occurring cobble formations that form berms at the beach boundary.

- The Stone Family is negotiating a Conservation Easement on the lot between the existing house and the Prouts Neck Bathing Association. This easement will permanently preserve the frontal dune property adding to the long-term benefits to the sand dune system associated with the Stone and Kohlberg projects.

3. Buried Engineering. On the design that replaces the vertical wall with another one that includes sheet pile, note that there is geotextile fabric behind the wall that encases some of the sand. While not exactly an enclosed Geotube, dune sand is partially enclosed and this design also represents the **installation of subsurface engineering in the frontal dune** – again beyond the footprint of the pre-existing structure.

RESPONSE: The Sand Dune Rules require consideration of a 2-ft rise in sea level. Even in the current tidal flood conditions, the existing timber bulkhead construction is not adequate to meet the applied loads as evidenced by recurrent failure of the timber bulkhead on the Stone and Rockefeller properties and the significant deflection and backfill loss on the Kohlberg timber bulkhead. Catastrophic property damage on the adjacent PNBA property was narrowly avoided with the replacement of the existing timber bulkhead and slab with a more robust design prior to the "Patriots Day Storm".

The stone mattress that projects into the frontal dune protects the transition bulkhead from 'backwash' blowout while allowing for some transfer of sand seaward in the event of aggressive wave overtopping and backwash. This occurs only at the vertical transition wall.

The previous section spoke to the **'seawall system'**, which is essentially all those components (sheathing, stone, backfill, dead men anchors, tiebacks, etc.) that function together to maintain the stability of the seawall. In the case of the stone mattress, this is a component of the proposed construction located landward of the structure in the region that would not exist if the '**seawall system**' were not in service.

Chapter 355 Coastal Sand Dune Rules compliance summary

The proposed stone revetment seawall replacement meets the section 5E requirements of the Chapter 355 Coastal Sand Dune Rules. These are restated below.

> *5 E. Seawalls and similar structures. No new seawall or similar structure may be constructed. No existing seawall or similar structure may be altered or replaced except as provided below, and as allowed under chapter 305, Permit By Rule and 38 M.R.S.A. 480-W.*
> *(1) Permanent alteration of different dimensions or location. With a permit from the department, a seawall or similar structure may be replaced with a structure of different dimensions or in a different location that is farther landward if the department determines that the replacement structure would be less damaging to the coastal sand dune system, existing wildlife habitat and adjacent properties than replacing the existing structure with a structure of the same dimensions and in the same location.*

- The Stone and Kohlberg seawall replacement projects are placed further landward than the existing timber bulkhead. The applicants have agreed to place the stone revetment entirely landward of the vertical wall alignment.

- The Stone and Kohlberg seawall replacement projects are less damaging to the coastal dune system. As presented in the response on page 3 of this supplement, the stone revetment is better at dissipating wave energy than the vertical seawall that it replaces. The net result is a reduction in the beach scour and the volume of water that overtops the structure from that which currently exists. These fundamental attributes significantly benefit the dune system while reducing storm damage on landward properties.

- The Stone and Kohlberg seawall replacement projects are less damaging to the wildlife habitat. No concerns have been raised by the DEP or review agencies that would suggest a negative impact to the wildlife habitat from seawall construction. In addition, the preservation of the wildlife resource on contiguous property by Conservation Easement is an obvious enhancement.

- The Stone and Kohlberg seawall replacement projects are less damaging to adjacent properties. As presented in the response on page 4 of this supplement, the replacement of the existing vertical bulkhead with a stone revetment and transition wall reduces the net contributory wave impact and overtopping onto abutting properties from that of the existing vertical timber bulkhead.

9/7/2009 George Bell (Harmon Street Neighbor) Email to Bill Bullard

From: Bell, George [mailto:gbell@generalcatalyst.com]
Sent: Monday, September 07, 2009 2:41 PM
To: Bullard, Bill
Cc: GStone@kestrelvm.com
Subject:

Mr. William Bullard
Maine Department of Environmental Protection
312 Canco Road
Portland, MA 04103

Re: Stone Beach Front Protection Plan

Dear Mr. Bullard:

I write to evidence support for the NRPA coastal sand dune application submitted by Marion R. Stone in March, 2008. I have been a summer resident on Harmon Street for over 40 years, and I am familiar with the Stones' plans as well as the limitations of the two prior wood bulkheads.

As a homeowner located on the upland sand dune directly in the line of any significant breach of the seawall, I can assure you that the trade off of a few cubic feet to protect the remaining dune area is an extremely favorable one. You must know that each time the Stone's vertical walls have been breached significant dune loss has occurred.

Abutters have also complained that the proposed sloped granite wall will detract from the current appearance seawall. Of course, from the land side, there will be no difference. From the water side, a sloped wall built of natural materials will be far more pleasing than the current mix of freshly preserved green timber, rotting timber, and concrete.

The Stones, with the residents of Harmon Street, have waited patiently for you to complete your review process. I urge you to approve the application in time for work to be completed this fall.

Sincerely yours,

George Bell (owner of 6 Harmon St.)

COMMENT: This email provides a favorable perspective for the proposed stone revetment.